

REMARKS

Applicant respectfully requests reconsideration and allowance of the subject application. Claims 1-29, 31-34, and 36-44 are pending in this application.

35 U.S.C. § 112

Claims 1, 2, 14, 16, 18, 29, 32, 34, and 38 stand rejected under 35 U.S.C. §112, second paragraph.

Claims 1, 16, 29, and 34 were rejected as being indefinite because it was not clear whether a register, a hardware, is modified or content of a register is modified. As part of this response, claims 1, 16, 29, and 34 have been amended to clarify the language of the claims.

Claims 1, 16, 29, 34, and 38 were rejected as being indefinite because it was not clear whether modification is made to the register, hardware, or the content of the register. As part of this response, claims 1, 16, 29, 34, and 38 have been amended to clarify the language of the claims.

Claims 2, 14, 18, and 22 were rejected as being indefinite because the term "possibly" is a relative term which renders the claim indefinite. Applicant respectfully disagrees and asserts that the language of claims 2, 14, 18, and 22 complies with 35 U.S.C. §112, second paragraph.

With respect to claim 22, claim 22 does not recite the word "possibly". Accordingly, Applicant respectfully submits that claim 22 complies with 35 U.S.C. §112, second paragraph.

With respect to claims 2, 14, and 18, Applicant respectfully submits that the word "possibly", as used in claims 2, 14, and 18, is not indefinite. For example,

claim 2 recites an affirmative act of identifying, with the word “possibly” describing the instructions that are identified as part of that identifying act. Applicant respectfully submits that one of ordinary skill in the art would readily recognize that there are some instructions that never modify the content of a register or flag, while there are others that might modify the content of a register or flag. Those instructions that might modify the content of a register or flag are the instructions that possibly modify the content of a register or flag, whereas those instructions that never modify the content of a register or flag would not possibly modify the content of a register or flag. Accordingly, Applicant respectfully submits that the word “possibly”, as used in claims 2, 14, and 18, is not indefinite.

For at least these reasons, Applicant respectfully submits that claims 1, 2, 14, 16, 18, 22, 29, 32, 34, and 38 comply with 35 U.S.C. §112, second paragraph.

Applicant respectfully requests that the §112 rejections be withdrawn.

35 U.S.C. § 103

Claims 1-4, 6-7, 10-20, 22-23, 26-9, 31-33, and 41-44 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,256,777 to Ackerman (hereinafter “Ackerman”) in view of U.S. Patent No. 5,852,664 to Iverson et al. (hereinafter “Iverson”). Applicant respectfully submits that claims 1-4, 6-7, 10-20, 22-23, 26-9, 31-33, and 41-44 are not obvious over Ackerman in view of Iverson.

Ackerman is directed to a method and apparatus for debugging of optimized machine code, using hidden breakpoints (see, Title). As discussed in

the Abstract of Ackerman, Ackerman describes a debugging method wherein a debug information file is constructed which includes information that identifies changes of variable value assignments to registers at plural steps of program. The information further includes data that identifies any change of sequence of machine code instructions from the sequence of source code instructions that gave rise to the machine code instructions. Using such information, hidden breakpoints are inserted into the machine code (wherein a hidden breakpoint enables access to an instruction to either store a variable value from an identified register or to move to a machine code instruction that corresponds in order to a source code instruction that gave rise to the machine code instruction). Thereafter, the program is executed under control of a debug program and, upon encountering a hidden breakpoint, automatically either stores the variable value that exists in the identified register or moves to execute a machine code instruction that is indicated by the hidden breakpoint. The actions carried out in response to encountering the hidden breakpoint are invisible to the user.

Iverson is directed to computer-implemented methods, apparatuses, and computer programs for encoding and decoding audio and/or video signals (see, col. 1, lines 8-10). As discussed in the Abstract of Iverson, multimedia signals are encoded with certain values to control a user's access to the decoding of the multimedia signals. In a preferred embodiment in which the multimedia signals contain video signals, a lock word and a checksum value are encoded into each frame header of the video stream. The lock word is the result of applying a specified hash function to the checksum value for the current frame and a specified access word. A decoder will decode the encoded video signals for the

current frame only if the result of applying the hash function to the access word (received from a decoding application) and the checksum value (retrieved from the frame header) is equal to the lock word (retrieved from the frame header). If the hash function result does not equal the lock word, then the decoder assumes that decode access is not permitted. In that case, the decoder will not decode the current frame and instead will send an error message to the decoding application (preferably after a specified delay).

As discussed at MPEP §§ 2142 and 2143, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicant respectfully submits that there is no suggestion or motivation to combine Ackerman and Iverson, and thus that no *prima facie* case of obviousness has been established. Ackerman, as discussed above, is directed to debugging of optimized machine code using hidden breakpoints. Iverson, as discussed above, is directed to encoding and decoding audio and/or video signals. There is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the debugging

teachings of Ackerman with the audio and/or video signal encoding and decoding of Iverson.

As discussed in MPEP §2143.01, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. Accordingly, Applicant respectfully submits that the mere fact that Ackerman and Iverson can be combined does not render the resultant combination obvious because the prior art does not suggest the desirability of the combination.

In the June 17, 2005 Office Action at pp. 4-5, it was asserted that:

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the system of Ackerman with the teachings of Iverson to include identifying a set of inputs to the function and determining a checksum for the function based at least in part on modifications made to the register by the extra instructions when the function is executed with the set of inputs with the motivation to provide a mechanism which controls a user's access to files (programs or functions) with different versions associated with different skill levels (col. 1, lines 12-37) and to control the access a user has to decode and/or edit files or functions.

Applicant respectfully disagrees and asserts that there would have been no motivation to combine Ackerman and Iverson. There are no files with different versions associated with different skill levels for which control of a user's access is needed in Ackerman. Ackerman, as discussed above, is directed to debugging of optimized machine code using hidden breakpoints, not any type of controlling user access to the code. Accordingly, Applicant respectfully submits that there would have been no motivation to combine Ackerman and Iverson.

For at least these reasons, Applicant respectfully submits that it would not have been obvious to combine Ackerman and Iverson, and thus that no *prima facie* case of obviousness has been established.

Furthermore, even if Ackerman and Iverson were combined, Applicant respectfully submits that the combination of Ackerman and Iverson does not disclose or suggest claims 1-4, 6-7, 10-20, 22-23, 26-9, 31-33, and 41-44.

With respect to claim 1, claim 1 recites:

One or more computer readable media having stored thereon a program that, when executed by one or more processors, causes the one or more processors to perform acts including:

- identifying a plurality of key instructions in a function;
- inserting into the function, for each of the plurality of key instructions, an extra instruction that modifies content of a register based at least in part on the corresponding key instruction;
- identifying a set of inputs to the function; and
- determining a checksum for the function based at least in part on modifications made to the content of the register by the extra instructions when the function is executed with the set of inputs.

Applicant respectfully submits that no such acts are disclosed or suggested by Ackerman and Iverson.

As discussed at MPEP §2143.03 (emphasis added), to establish *prima facie* obviousness of a claimed invention, **all the claim limitations must be taught or suggested by the prior art.** *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPO2d 1596 (Fed. Cir. 1988).

Applicant respectfully submits that Ackerman and Iverson do not disclose or suggest determining a checksum for the function based at least in part on modifications made to the content of the register by the extra instructions when the function is executed with the set of inputs as recited in claim 1. As discussed above, Ackerman describes breakpoints when debugging, while Iverson describes generating checksums on encoded frame data. Although Iverson discusses checksums and generating checksums over a frame of data, Iverson does not include any discussion or mention of how the checksums are generated. Without any discussion or mention of how checksums are generated, Applicant respectfully submits that Iverson cannot disclose determining a checksum for a function as recited in claim 1.

With respect to Ackerman, it is acknowledged in the June 17, 2005 Office Action at p. 4 that Ackerman does not disclose determining a checksum for a function as recited in claim 1. As neither Ackerman nor Iverson discloses or suggests determining a checksum for a function as recited in claim 1, Applicant respectfully submits that the combination of Ackerman and Iverson cannot disclose or suggest determining a checksum for a function as recited in claim 1.

For at least these reasons, Applicant respectfully submits that claim 1 is allowable over Ackerman in view of Iverson.

With respect to claims 2-4, 6, 7, 11, and 41, given that claims 2-4, 6, 7, 11, and 41 depend from claim 1, Applicant respectfully submits that claims 2-4, 6, 7, 11, and 41 are likewise allowable over Ackerman in view of Iverson for at least the reasons discussed above with respect to claim 1.

With respect to claim 10, claim 10 depends from claim 1 and Applicant respectfully submits that claim 10 is allowable over Ackerman in view of Iverson for at least the reasons discussed above with respect to claim 1. Furthermore, claim 10 recites:

One or more computer readable media as recited in claim 1, wherein the determining comprises determining as the checksum both an initial value (x_0) and a calculated value (Cks), wherein the initial value is a first input of the set of inputs, and wherein the calculated value is calculated according to the following process:

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Start with  $x = x_0$ 
 $Cks := f(x_0) \text{ XOR } x_0$ 
For  $i=1$  to  $K$  do
     $x_i := g(f(x_{i-1}))$ 
     $Cks += f(x_i) \text{ XOR } x_i$ 
End for
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wherein K is the number of inputs in the set of inputs and g represents the mapping function.

Applicant respectfully submits that Ackerman in view of Iverson does not disclose or suggest determining a checksum as described in claim 10.

In the June 17, 2005 Office Action at pp. 10-11, Iverson at col. 6, lines 57-67 is cited as disclosing the determining of claim 10. However, the cited portion of Iverson discusses a hash function, not determining a checksum. The hash function discussed in the cited portion of Iverson is applied to the access word and checksum value of Iverson (see, col. 6, lines 50-55), but there is no discussion or mention that this hash function generates the checksum value of Iverson. As the cited portion of Iverson discusses using a checksum value rather than generating a checksum value, Applicant respectfully submits that the cited portion of Iverson cannot disclose or suggest determining a checksum as described in claim 10.

With respect to Ackerman, it is acknowledged in the June 17, 2005 Office Action at pp. 10-11 that Ackerman does not disclose the determining as recited in claim 10. As neither Ackerman nor Iverson discloses or suggests determining a checksum as recited in claim 10, Applicant respectfully submits that the combination of Ackerman and Iverson cannot disclose or suggest determining a checksum as recited in claim 10.

For at least these reasons, Applicant respectfully submits that claim 10 is allowable over Ackerman in view of Iverson.

With respect to claim 43, although the June 17, 2005 Office Action at p. 3 indicates that claim 43 is rejected over Ackerman in view of Iverson, there is no indication of where in Ackerman or Iverson claim 43 is asserted as being disclosed, and it is acknowledged in the June 17, 2005 Office Action at p. 14 that Ackerman and Iverson do not disclose the repeating of claim 43. Accordingly, for at least these reasons, Applicant respectfully submits that claim 43 is allowable over Ackerman in view of Iverson.

With respect to claim 12, claim 12 recites:

A method comprising:
generating a checksum on bytes of a digital good based on
modifications made by the digital good rather than on reading the
bytes.

Applicant respectfully submits that no such generating is disclosed or suggested by Ackerman and Iverson.

In the June 17, 2005 Office Action at p. 5, Iverson at col. 6, lines 51-67 is cited as disclosing generating a checksum on bytes of a digital good based on modifications made by the digital good rather than on reading the bytes. Applicant respectfully disagrees. The cited portion of Iverson discusses a hash

function, not generating a checksum. The hash function discussed in the cited portion of Iverson is applied to the access word and checksum value of Iverson (see, col. 6, lines 50-55), but there is no discussion or mention that this hash function generates the checksum value of Iverson. As the cited portion of Iverson discusses using a checksum value rather than generating a checksum value, Applicant respectfully submits that the cited portion of Iverson cannot disclose or suggest generating a checksum as recited in claim 12.

With respect to Ackerman, it is acknowledged in the June 17, 2005 Office Action at p. 5 that Ackerman does not disclose the generating as recited in claim 12. As neither Ackerman nor Iverson discloses or suggests generating a checksum as recited in claim 12, Applicant respectfully submits that the combination of Ackerman and Iverson cannot disclose or suggest generating a checksum as recited in claim 12.

For at least these reasons, Applicant respectfully submits that claim 12 is allowable over Ackerman in view of Iverson.

With respect to claim 13, claim 13 depends from claim 12 and Applicant respectfully submits that claim 13 is allowable over Ackerman in view of Iverson for at least the reasons discussed above with respect to claim 12. Furthermore, claim 13 recites:

A method as recited in claim 12, wherein the generating comprises:

- identifying a plurality of key instructions in a function;
- inserting into the function, for each of the plurality of key instructions, an extra instruction that modifies a register based at least in part on the corresponding key instruction;
- identifying a set of inputs to the function; and
- determining a checksum for the function by mapping contents of the register to the set of inputs.

or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Applicant respectfully submits that there is no suggestion or motivation to combine Ackerman and Iverson, as discussed above. Furthermore, Applicant respectfully submits that there is no suggestion or motivation to combine Ackerman and Iverson with Suzuki, and thus that no *prima facie* case of obviousness has been established. Ackerman, as discussed above, is directed to debugging of optimized machine code using hidden breakpoints. Iverson, as discussed above, is directed to encoding and decoding audio and/or video signals. Suzuki, as discussed above, is directed to a program converting unit for generating a machine language instruction from a source program for a processor that manages an N-bit address while processing M-bit data, N being greater than M. There is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the debugging teachings of Ackerman and the audio and/or video signal encoding and decoding of Iverson with the program converting unit of Suzuki.

As discussed in MPEP §2143.01, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. Accordingly, Applicant respectfully submits that the mere fact that Ackerman, Iverson, and Suzuki can be combined does not render the resultant combination obvious because the prior art does not suggest the desirability of the combination.

In the June 17, 2005 Office Action at p. 12, it was asserted that:

Therefore, it would have been obvious to one of ordinary skill in the art to modify the combination of Ackerman and Iverson to

include that the inserting comprises inserting each extra instruction in a location within the functions so that the extra instruction is executed after the corresponding key instruction is executed with the motivation to minimize the overhead during execution [see Suzuki, col. 9, lines 5-7].

Applicant respectfully disagrees and asserts that there would have been no motivation to combine Ackerman and Iverson with Suzuki. There is no disclosure or suggestion that inserting an extra instruction in Ackerman or Iverson after a corresponding key instruction is executed would do anything to minimize overhead during execution. There is no stated desire or need in Ackerman or Iverson for reducing overhead during execution, much less any indication that overhead would be reduced in Ackerman or Iverson by such insertion of an extra instruction. Accordingly, Applicant respectfully submits that there would have been no motivation to combine Ackerman and Iverson with Suzuki.

For at least these reasons, Applicant respectfully submits that it would not have been obvious to combine Ackerman and Iverson with Suzuki, and thus that no *prima facie* case of obviousness has been established.

Furthermore, even if Ackerman and Iverson and Suzuki were combined, Applicant respectfully submits that the combination of Ackerman and Iverson and Suzuki does not disclose or suggest claims 5 and 21.

With respect to claim 5, claim 5 depends from claim 1 and Applicant respectfully submits that claim 5 is allowable over Ackerman in view of Iverson for at least the reasons discussed above with respect to claim 1. Furthermore, Applicant respectfully submits that Suzuki is not cited as curing, and does not cure, the deficiencies of Ackerman in view of Iverson discussed above with respect to claim 1. For at least these reasons, Applicant respectfully submits that claim 5 is allowable over Ackerman in view of Iverson and Suzuki.

With respect to claim 21, claim 21 depends from claim 16 and Applicant respectfully submits that claim 21 is allowable over Ackerman in view of Iverson for at least the reasons discussed above with respect to claim 16. Furthermore, Applicant respectfully submits that Suzuki is not cited as curing, and does not cure, the deficiencies of Ackerman in view of Iverson discussed above with respect to claim 16. Thus, for at least these reasons, Applicant respectfully submits that claim 21 is allowable over Ackerman in view of Iverson and Suzuki.

Claims 8-9, 24-25, and 43-44 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ackerman in view of Iverson in further view of U.S. Patent No. 6,085,029 to Kolawa et al. (hereinafter "Kolawa"). Applicant respectfully submits that claims 8-9, 24-25, and 43-44 are not obvious over Ackerman and Iverson in further view of Kolawa.

Applicant respectfully submits that there is no suggestion or motivation to combine Ackerman and Iverson, as discussed above, and thus that there is no suggestion or motivation to combine Ackerman and Iverson and Kolawa. Furthermore, even if Ackerman and Iverson and Kolawa were combined, Applicant respectfully submits that the combination of Ackerman and Iverson and Kolawa does not disclose or suggest claims 8-9, 24-25, and 43-44.

With respect to claims 8, 9, and 43, claims 8, 9, and 43 depend from claim 1 and Applicant respectfully submits that claims 8, 9, and 43 are allowable over Ackerman in view of Iverson for at least the reasons discussed above with respect to claim 1. Furthermore, Applicant respectfully submits that Kolawa is not cited as curing, and does not cure, the deficiencies of Ackerman in view of Iverson discussed above with respect to claim 1. Thus, for at least these reasons,

Applicant respectfully submits that claims 8, 9, and 43 are allowable over Ackerman in view of Iverson and Kolawa.

With respect to claims 24, 25, and 44, claims 24, 25, and 44 depend from claim 16 and Applicant respectfully submits that claims 24, 25, and 44 are allowable over Ackerman in view of Iverson for at least the reasons discussed above with respect to claim 16. Furthermore, Applicant respectfully submits that Kolawa is not cited as curing, and does not cure, the deficiencies of Ackerman in view of Iverson discussed above with respect to claim 16. Thus, for at least these reasons, Applicant respectfully submits that claims 24, 25, and 44 are allowable over Ackerman in view of Iverson and Kolawa.

Claims 34 and 36-40 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,548,648 to Yorke-Smith (hereinafter "Yorke-Smith") in view of Iverson. Applicant respectfully submits that claims 34 and 36-40 are not obvious over Yorke-Smith in view of Iverson.

Yorke-Smith is directed to a data encryption method and system (see, col. 1, lines 2-3). As discussed in the Abstract of Yorke-Smith, Yorke-Smith provides a simple encryption method and system for encrypting data into a plurality of control and encrypted data blocks. The data to be encrypted is divided into data segments which can be of varying length. Each control block comprises the information necessary to decrypt the data contained in the encrypted data block, such as the encryption function and associated key used to encrypt a data segment, the start position of an encrypted data segment within the encrypted data block and the length of the encrypted data block. Both the control block and the encrypted

data block are padded with random numbers and the start position of the encrypted data with the encrypted data block can vary.

With respect to claim 34, claim 34 recites:

A client-server system, comprising:
a production server to apply oblivious checking to a program to produce a protected program by:
inserting, into a segment of the program, a plurality of instructions that modify content of a register;
identifying a set of inputs to the segment; and
determining a checksum value for the segment based at least in part on modifications made to the content of the register by the plurality of instructions when the segment is executed with the set of inputs; and
a client to store and execute the protected program, the client being configured to evaluate the protected program to determine whether the protected program has been tampered with.

Applicant respectfully submits that no such client-server system is disclosed or suggested by Yorke-Smith and Iverson.

In the June 17, 2005 Office Action at p. 15, it was asserted that Yorke-Smith discloses identifying a set of inputs to the segment as recited in claim 34, and that "Figure 4 and associated text, numeral elements 400, 410, 420, 430, 440 and 40 disclose generating random numbers used as input to identify a segment". Applicant respectfully disagrees and submits that Yorke-Smith does not disclose identifying a set of inputs to the segment as recited in claim 34.

The cited portion of Yorke-Smith discusses a first random number is generated from a predetermined range to select the encryption function to be used to encrypt a data segment, a second random number is generated from a second predetermined range to select the encryption key to be used with the selected encryption function to encrypt the data segment, a third random number is

generated within a predetermined range to determine the total length of the encrypted data block, a fourth random number within a range determined by the third random number is generated which identifies the start position of the encrypted data segment within the encrypted data block, and a fifth random number is generated within a range determined by the third and fourth random numbers to determine the size of data segment to be encrypted (see, col. 4, lines 25-40). Thus, it can be seen that these generated random numbers in the cited portion of Yorke-Smith are not inputs to the segment; rather, these generated random numbers are used to identify a data segment and how that data segment is to be encrypted. Accordingly, Applicant respectfully submits that Yorke-Smith does not disclose or suggest identifying a set of inputs to the segment as recited in claim 34. With respect to Iverson, Iverson is not cited as curing, and does not cure, these deficiencies of Yorke-Smith.

Furthermore, in the June 17, 2005 Office Action at p. 15, Iverson was cited as disclosing determining a checksum value as recited in claim 34. As discussed above, Iverson discusses a hash function, not generating a checksum. The hash function discussed in the cited portion of Iverson is applied to the access word and checksum value of Iverson (see, col. 6, lines 50-55), but there is no discussion or mention that this hash function generates the checksum value of Iverson. As there is no discussion or mention in Iverson of how the checksum is generated, Applicant respectfully submits that Iverson cannot disclose or suggest determining a checksum as recited in claim 34.

With respect to Yorke-Smith, it is acknowledged in the June 17, 2005 Office Action at p. 5 that Yorke-Smith does not disclose the determining as recited

in claim 34. As neither Yorke-Smith nor Iverson discloses or suggests determining a checksum as recited in claim 34, Applicant respectfully submits that the combination of Yorke-Smith and Iverson cannot disclose or suggest determining a checksum as recited in claim 34.

For at least these reasons, Applicant respectfully submits that claim 34 is allowable over Yorke-Smith in view of Iverson.

With respect to claims 36 and 37, given that claims 36 and 37 depend from claim 34, Applicant respectfully submits that claims 36 and 37 are likewise allowable over Yorke-Smith in view of Iverson for at least the reasons discussed above with respect to claim 34.

With respect to claim 38, Applicant respectfully submits that, similar to the discussion above regarding claim 34, Yorke-Smith in view of Iverson does not disclose or suggest generating a checksum value for a segment of a digital good based at least in part on both a set of inputs to the segment and the content of a register that results from applying the set of inputs to the segment and modification of the content of the register by instructions in the segment as recited in claim 38. For at least these reasons, Applicant respectfully submits that claim 38 is allowable over Yorke-Smith in view of Iverson.

With respect to claims 39 and 40, given that claims 39 and 40 depend from claim 38, Applicant respectfully submits that claims 39 and 40 are likewise allowable over Yorke-Smith in view of Iverson for at least the reasons discussed above with respect to claim 38.

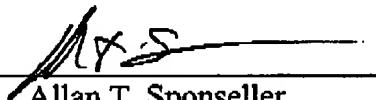
Applicant respectfully requests that the §103 rejections be withdrawn.

Conclusion

Claims 1-29, 31-34, and 36-44 are in condition for allowance. Applicant respectfully requests reconsideration and issuance of the subject application. Should any matter in this case remain unresolved, the undersigned attorney respectfully requests a telephone conference with the Examiner to resolve any such outstanding matter.

Respectfully Submitted,

Date: 9/19/05

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